

## Notes on the genus *Lepidium* (Brassicaceae) in Western Australia, including recognition of a new species, *L. amelum*

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### Abstract

B.J. Lepschi. Notes on the genus *Lepidium* (Brassicaceae) in Western Australia, including recognition of a new species, *L. amelum*. *Nuytsia* 12 (2): 191–195 (1998). *Lepidium amelum* Lepschi, a rare taxon from the Pilbara region of Western Australia is described, illustrated and its distribution mapped. Descriptions and illustrations of the previously unknown fruit and seed of the rare species *L. catapycnon* Hewson and *L. xylodes* Hewson are also presented.

### Introduction

*Lepidium* L. (Brassicaceae) is a widespread genus of some 150 species, represented in Australia by 34 indigenous and eight introduced species (Hewson 1982a, b). Thirty species have been recorded from Western Australia, three of these introduced, with 12 of the indigenous taxa regarded as rare or threatened (Anon. 1996). This paper presents a description of a rare, new *Lepidium* from the eastern Pilbara region, as well as information on the fruits and seeds of two other rare species in the genus.

### Materials and methods

This study is based on examination of herbarium collections from AD, BRI, DNA and PERTH. "Karratha", cited in the *exsiccatae* list for *L. amelum* and *L. catapycnon*, refers to the Department of Conservation and Land Management's regional herbarium situated at Karratha, Western Australia. All measurements were made from herbarium material (reconstituted where necessary). See the end of this issue for definitions of conservation codes used in this paper.

### New species description

***Lepidium amelum*** Lepschi, *sp. nov.*

A sp. *L. pedicellosae* F. Muell. foliorum basi sessili, auriculata differt.

*Typus*: 300 m north-west of Bells Pit, Woodie Woodie [mine], Oakover River Catchment, north-east Pilbara, Western Australia, early August 1996, A.S. Weston 96.8.1 (*holo*: PERTH 04656148; *iso*: CANB, K, MEL, US)

Erect *shrub* 0.3–1 m, all parts glabrous, leaves and stems glaucous. *Leaves* alternate, sessile, broadly elliptic to subcircular, 7.8–41 mm long, 8–36 mm wide; base auriculate; apex apiculate; margin entire. *Inflorescence* an elongate raceme, inserted terminally on the branches. *Sepals* 4, narrowly ovate to elliptic or oblong-elliptic, more or less concave and shallowly hooded distally, 5.26 mm long, 1.9–2.7 mm wide. *Petals* 4, proximal *c.* two-thirds pseudotubular (margins strongly to (rarely) weakly inrolled, cucullate at the base), distal *c.* one-third flat and ovate to rounded-triangular, entire petal more or less rhomboid when flattened out, 6.5–7.2 mm long, 2.7–3.5 mm wide, white. *Stamens* 6; filaments linear, 5.7–6 mm long; anthers elliptic to oblong-elliptic, 1.7–1.8 mm long. *Style* 3.2–3.9 mm long, markedly exsert in fruit, stigma small, subcapitate. *Pedicels* spreading in mature fruit; straight to slightly recurved, 6.5–7.5 mm long. *Silicula* elliptic to broadly elliptic, 7.7–8.3 mm long, 5.5–6 mm broad, winged, the wings obtuse to more or less acute, forming a notch *c.* 1/8–1/10 of the length of the silicula; gynophore hardly developed. *Seed* more or less elliptic, 3–3.5 mm long, 1.7–2.0 mm wide, red-brown, smooth, strongly mucose; cotyledons incumbent. (Figure 1A–C)

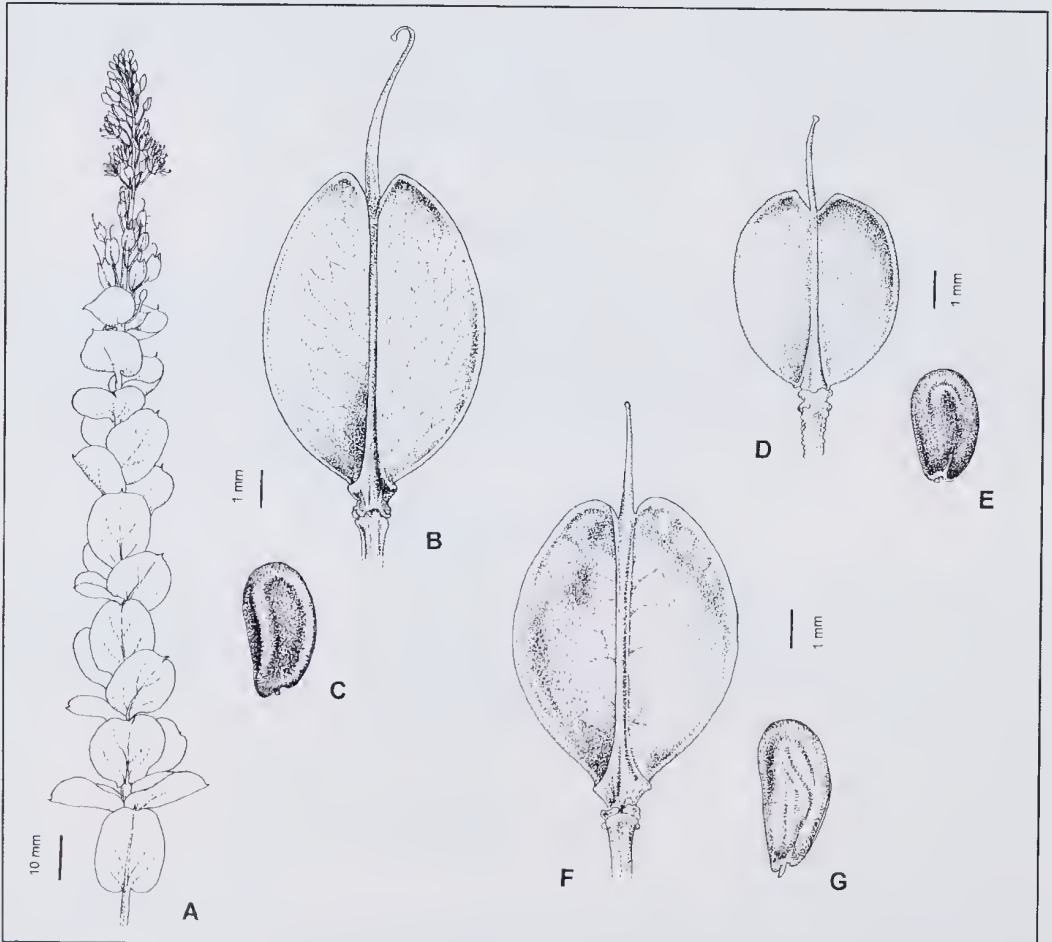


Figure 1. *Lepidium amelum*. A – branchlet; B – fruit; C – seed. *L. catapyron*. D – fruit; E – seed. *L. xylodes* F – fruit; G – seed. Drawn from Davis 98 (A–C), Start & Nicholson 15/10/85-4 (D, E) and Mitchell 811 (F, G).

*Specimens examined.* WESTERN AUSTRALIA: [c. 110 km ESE of Nullagine], 20–22 June 1979, G. Davis 98 (PERTH); c. 12 km SE of Skull Springs on Wandanya Station, 1 Nov. 1996, K.A. Leighton PRP 1408 (CANB, NSW, PERTH); 14 km W of Tanguin Hill, c. 100 km SE of Shay Gap, 15 July 1984, K.R. Newbey 10501 (CANB, MEL, PERTH); 79.7 km from Warrawagine Homestead on a bearing of 154°, 30 June 1997, A.L. Payne PRP 1613 (AD, BRI, CANB, Karratha, PERTH).

*Distribution.* Restricted to the Oakover River Valley area, just west of Rudall River National Park in the north-eastern Pilbara region of Western Australia. (Figure 2)

*Habitat.* Occurs on stony, calcareous, alkaline soils formed from tertiary calcretes of the Oakover Formation (A.A. Mitchell pers. comm.). Recorded from *Triodia wiseana* C.A. Gardner hummock grassland (Leighton PRP 1408, Payne PRP 1613), low, open *Corymbia* sp. woodland (Newbey 10501), and with *Lepidium pholidogynum* F. Muell on the wall of a disused settlement pond on a mine site (Weston 96.8.1).

*Phenology.* Flowering and fruiting recorded June–August.

*Conservation status.* CALM Conservation Code for the Western Australian Flora: Priority One. Known from a small number of populations in an active mining area.

*Etymology.* Named from the Greek *a-*not, without, and *melos*—a limb, in reference to the sessile leaves.

*Notes.* *Lepidium amelum* is closely related to *L. pedicellosum*, with which it shares a distinctive petal morphology. It can be distinguished from this species by its sessile, amplexicaul leaf bases, and in being consistently glabrous. Leaves in *L. pedicellosum* are attenuate with a petiole up to 7 mm long,

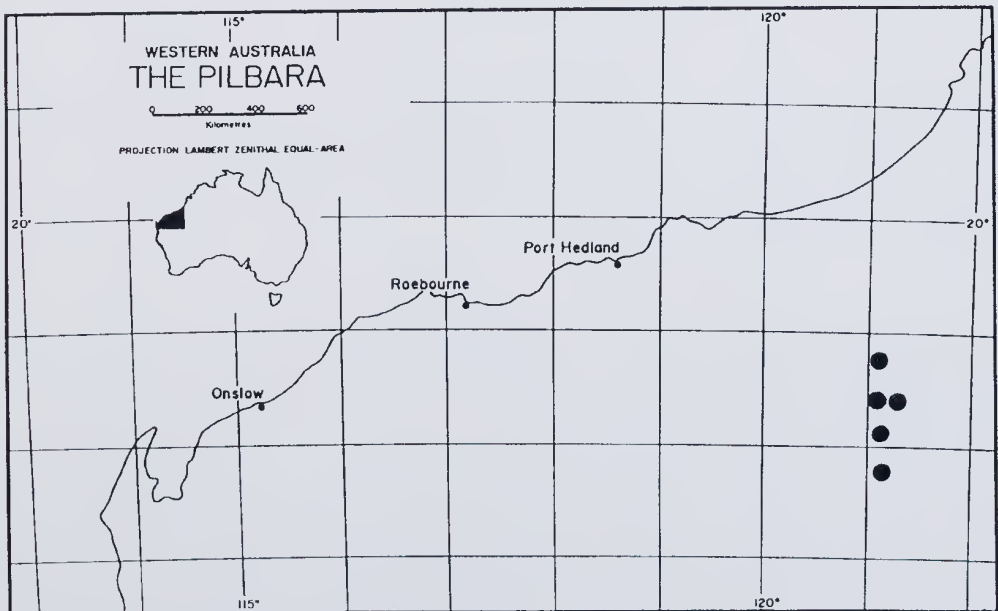


Figure 2. Distribution of *Lepidium amelum*.

and occasional plants of this species may also be hairy. *Lepidium amelum* and *L. pedicellosum* are also allied to *L. stronglophyllum* F. Muell. ex Benth., from central and eastern Australia.

While *L. amelum*, *L. pedicellosum* and *L. stronglophyllum* are similar in their overall morphology, I have elected to recognize all three as distinct species. No intergradation has been observed on herbarium material, and no intermediate plants are known in the field. All three taxa also occupy discrete geographical ranges. Treating *L. amelum* as a subspecies of *L. pedicellosum* is not realistic, as the distinctions between these taxa are of the same magnitude as the differences between *L. pedicellosum* and *L. stronglophyllum*. Reducing both *L. amelum* and *L. pedicellosum* to subspecies of *L. stronglophyllum* would also appear to serve little purpose.

*Lepidium pedicellosum* has been treated as conspecific with *L. stronglophyllum* by some authors in the past (e.g. Mueller 1883). However, as demonstrated by Carolin & Hewson (1981) and Hewson (1982a, b), the two species can readily be separated by petal morphology and width. Petals in *L. pedicellosum* are identical in morphology to those of *L. amelum* (see description above), and are 2.5–3.6 mm wide, while *L. stronglophyllum* has more or less flat (i.e. not pseudotubular) petals (see Carolin & Hewson 1981, Hewson 1982a, b) which are 1.2–1.7 mm wide. Note that measurements presented here are taken from reconstituted petals flattened out to their full width, and differ slightly from those cited in earlier publications (it should also be noted that the descriptions of *L. pedicellosum* presented by Carolin & Hewson (1981) and Hewson (1982a, b) do not encompass any elements of *L. amelum*). As well as differences in petal characters, *L. pedicellosum* is sometimes hairy, whereas *L. stronglophyllum* (and *L. amelum*) are always glabrous.

*Lepidium amelum* has been referred to as *Lepidium* sp. Tanguin Hill (K.R. Newbey 10501) at PERTH and by Anon. (1996).

### Fruit and seed descriptions

*Lepidium catapycnon* and *L. xyloides* are two rare, poorly known taxa from the Eremaean Botanical Province (cf. Beard 1980) of Western Australia. Fruit and seed of both taxa were unknown at the time of Hewson's (1982a, b) treatments of the genus, but mature fruiting material of both taxa has since become available, allowing descriptions of the fruits and seeds to be made.

#### **Lepidium catapycnon** Hewson

*Style* 2.0–2.5 mm long, markedly exsert in fruit; stigma small, subcapitate. *Silicula* broadly elliptic to subcircular, 5.0–5.5 mm long, 4.0–4.5 mm broad, winged, sparsely papillose, especially on the wings; wings obtuse to more or less acute, forming a notch c. 1/8 the length of the silicula; gynophore hardly developed. *Seed* more or less elliptic 2.3–2.6 mm long, 2.0–2.5 mm broad, red-brown, smooth, strongly mucose; cotyledons incumbent. (Figure 1D, E)

*Specimens examined.* WESTERN AUSTRALIA: Near Wittenoom [precise locality withheld due to conservation reasons], 15 Oct. 1985, A.N. Start & C.J. Nicholson CJN 15/10/1985-2, A.N. Start & C.J. Nicholson CJN 15/10/1985-4 (both Karratha, PERTH); Near Newman [precise locality withheld due to conservation reasons], Jan. 1997, M. Maier s.n. (PERTH).

*Conservation status.* CALM Conservation Codes for the Western Australian Flora: Declared Rare.

*Notes.* Hewson (1982a) considered *L. catapycnon* to be related to *L. pedicellosum*, but *L. catapycnon* would appear to have greater affinity with *L. platypetalum* Hewson, which it superficially resembles. *Lepidium catapycnon* and *L. platypetalum* have distinctive, linear, more or less terete leaves, which are quite different from the broad, flat, transversely linear leaves of *L. pedicellosum*. These taxa also share pseudotubular, cucullate petals. *Lepidium catapycnon* and *L. platypetalum* may be separated by indumentum and silicula size.

### **Lepidium xylodes** Hewson

*Style* 2.5–3.0 mm long, markedly exsert in fruit; stigma small, subcapitate. *Silicula* elliptic to ovate, 6.5–7.0 mm long, 4.5–5.0 mm broad, winged, sparsely papillose, especially on the wings; wings narrow, forming a very shallow notch; gynophore developed, to 0.7 mm long. *Seed* 3.3–3.7 mm long, 1.7–2.5 mm broad, red-brown, smooth, strongly mucose; cotyledons incumbent, tending to become biplicate. (Figure 1F, G)

*Specimen examined.* WESTERN AUSTRALIA: Yarlingulla Paddock, Bebele Station, 12 Nov. 1980, A.A. Mitchell 811 (PERTH).

*Conservation status.* CALM Conservation Codes for the Western Australian Flora: Priority One.

*Notes.* The presence of more or less biplicate cotyledons in *L. xylodes* suggests a possible relationship with *L. genistoides* Hewson, a species of uncertain affinities, which also exhibits similar cotyledon morphology. Hewson (1982a) suggested *L. genistoides* may be misplaced in subsect. *Monoploca* (of sect. *Monoploca* (Bunge) Prantl), given the more or less biplicate cotyledons, and could perhaps be accommodated in subsect. *Diptoploca* Hewson. This also applies to *L. xylodes*, but until more fruiting material becomes available, so that this feature can be examined in more detail, both taxa are best retained in subsect. *Monoploca*.

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